Waste Reduction Goal Task Force
BRIEFING PAPER
For
Measuring Recycling and Diversion Rates

Tennessee Current Diversion Rate Calculation Method:

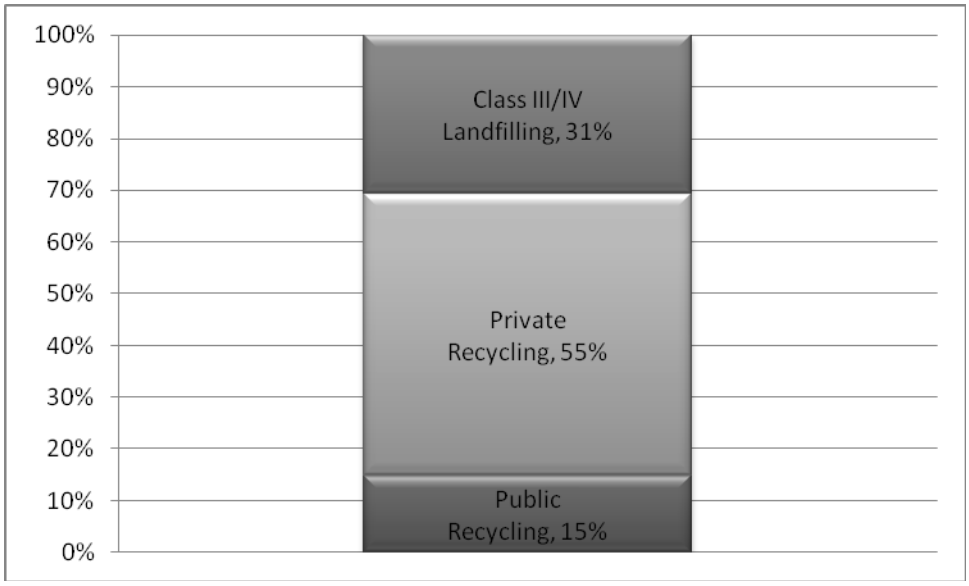
A **Generation** number is calculated by totaling the following items from each region

- Class I Landfill Tonnage
    - Class I landfill tonnages are taken from the Municipal Solid Waste Planning Region Annual Progress Reports (APRs). These Class I landfill tonnages are self reported by the report author and approved by the regional Solid Waste Planning Board. The APR asks for the tonnage that goes to each utilized landfill in addition to how much is shipped out of state. The APR tonnage is compared to the Class I landfill Origin Reports received by TDEC on a quarterly basis. These Origin Reports are completed by the individual landfills and are required of permitted facilities under the Solid Waste Act. If an APR tonnage differs significantly from the Origin Report, then TDEC staff contacts the reporter to clarify whether tonnages reported are correct.
- Class III/IV Landfill Tonnage
    - Many Class III/IV landfills in Tennessee do not have accurate or functional scales. No origin reports are required for these facilities. Class III/IV landfill tonnages are provided only within the APR's and are calculated using a volume (cubic yards) to tonnage conversion. Reported tonnages are reviewed for trends from previous year reports. TDEC staff to the best of their abilities verifies any large variations or abnormally large tonnages. Irregular tonnages are deducted from the generation number if they cannot be confirmed.
- Public Recycling Program Tonnages
    - Public recycling tonnages are reported within the County Recycling Reports or CRR in the Annual Progress Reports submitted by each region. Tonnages are comprised of county and municipal recycling collection efforts at convenience centers as well as curbside and drop-off locations. Other items included in this category are public mulching and composting programs.
- Private Recycling Program Tonnages
    - Private recycling program tonnages are usually commercial and industrial recycling programs reported in the CRRs. The companies who submit these CRR's vary year to year with little consistency. A large-scale

business with a recycled material may choose or fail to report in any given year. Doing yearly statistical evaluations of private recycling program totals is not possible. Due to the yearly variance, these numbers are often omitted when reporting recycling trends in TN.

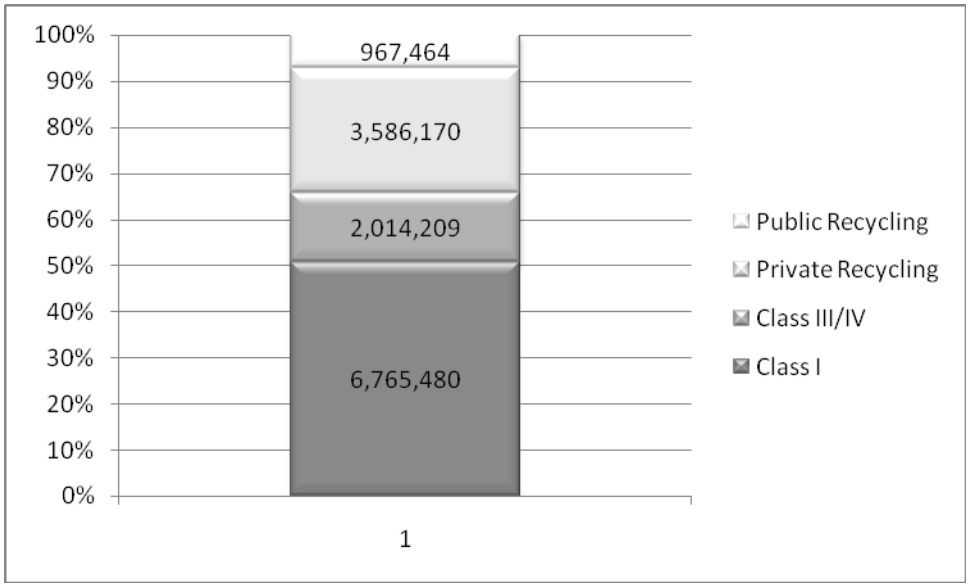
The two tables below show a reported diversion by percent composition and generation comparing raw numbers by disposal/diversion category (disposal, class III/IV diversion, private and public recycling).

Percentage of Total 2006 Diversion by Weight



Composition 2006 Waste Generation as reported in the APR's

Numbers in Tons



Recycling Rate Vs Diversion Rate

The terms recycling rate and diversion rate are often used interchangeably in press; however they are very different.

A recycling rate is a measure of only the recycling efforts of a region. A recycling rate is the total measure of all recyclable materials in tons collected, processed and marketed to be converted to a beneficial new product as compared to materials being disposed in a Class I landfill. Often the recycling rate only extends to those materials that are considered municipal solid waste (MSW). Definitions of Municipal Solid Waste vary making for further complexity. Attached is a copy of the EPA definitions of MSW *(EPA530-R-97-011 Measuring Recycling; A Guide for State and Local Governments, pg 11-14*).

A Diversion rate takes into account all those items that have potential for entering the landfill. Tennessee's diversion rate which is used in the current "real-time" or "qualitative" measurement method sums all those items that have been reported as waste with the potential to enter a Class I landfill. This sum of all materials is referred to as the **Total Waste Generation.** A second sum is taken that includes those items in the Total Waste Generation that did not enter the Class I landfill. This number is referred to as the **Diversion.**

Below are some choice examples from the 2006 APR of items counted towards Tennessee's Diversion sum to give an idea of the variety of items in this category.

- Construction and Demolition materials landfilled at a Class III/IV facility
- Plastic bottles collected at a convenience center
- Brush mulched at a county processing center
- Municipal Solid Waste composted at a composting center.
- Scrap metals processed by a large scale private metals processor
    - Only metal generated in Tennessee is counted.
    - A good effort is made to make sure this tonnage is not double counted elsewhere.
- Plastic scrap from a plastics packaging company.
- Food waste from a food processor.
- Scrap wood from pallet manufacturing.
- Composted sewage sludge (dry weight).
- Various alternative daily covers used on Class I landfills.
- Source reduction and reuse
    - As these materials are difficult to quantify at times, tonnages have not been assigned towards these activities.
- Automotive Fluids
- Tires sent to beneficial end use under the state grant program.

Many of the items above do not fall within the EPA's guidelines for municipal solid waste or their guidelines for calculating recycling rates. This makes national reporting of Tennessee's recycling and diversion difficult to compare against other programs. This problem is not limited to Tennessee as there is little standardization in this solid waste measurement.

The current Tennessee method for determining what should and should not be counted is based upon a subjective assessment of whether the waste material has the potential to end up in a Class I landfill.

To give a few examples, items such as scrap automobiles has historically been excluded from CRR's as they have been recycled for their steel content for many years and do not have a history of ending up in landfills. Items such as sawdust from mills have been counted in CRR's as recycling of this material is widespread but not always present.

Problems with County Recycling Reports in regards to Industrial/Commercial recycling reporting:

The term "Industrial Recycling" and "Commercial" recycling almost synonymous with the term "Private Recycling". Currently Industrial Recycling is reported within County

Recycling Reports within the Annual Progress Reports. In 2006 private or industrial/commercial recycling amounted to over ½ of all state Diversion and over 1/4th of total Generation.

Submission of a CRR by industry or commercial agencies is purely up to the individual company. The contact point responsible for completing the APR is often charged with researching the areas industries and surveying them. As with all surveying methods, there is will always be a high degree of non-participation.

Another limiting factor is the amount of time and dedication the person completing the report takes in having the industries surveyed. Methods exist to increase the reply frequencies such as explaining the importance towards a county meeting state goals and grant eligibility. If an industry does not respond by a certain deadline, the report preparer must omit that industry from the report to avoid delinquency with the rest of the APR.

To highlight the problem; consider the situation below:

3.5 million tons of Private/Industrial/Commercial recycling was reported in TN in 2006. Assuming a generous 30% of all industries with recycling were surveyed and 50% of those responded, then only 15% of the industries with recycling in Tennessee represent the 3.5 million tons. If we assume that the other 85% of industries with recycling preformed at the same benchmarks, that makes for 23.3 Million Tons of Commercial/Industrial Recycling with 19.8 million tons going unreported. If we were to add 19.8 million tons of recycling to the states 2006 Generation total, the result would give 33 Million Tons of Generation and push Tennessee's Diversion rate to 80%.

Below is a breakdown of six classes of recyclables from the 2006 Annual Progress report from both Public and Industrial collection. In the case of metal there was 48 times as much industrial metal accepted than publically collected metal.

Public and Government Collection

Paper	Metal	Plastic	Glass	Oil	Tires
85,387.04	36,370.93	4,274.05	5,196.71	2,921.98	55,709.23

Industrial and Commercial

Paper	Metal	Plastic	Glass	Oil	Tire
556,307.02	1,751,999.45	72,769.80	59,124.37	16,399.68	17,193.08

Pre Consumer vs. Post Consumer Waste

Pre Consumer and Post Consumer recyclables are very closely related to Industrial and Public Recycling.

Those items that have not reached a consumer yet for its initial use, and are deemed a waste product are often recycled into other products or put back into a production line in some manner. This process is labeled as “pre-consumer recycling”. Tennessee allows most types of pre consumer recycling to be counted towards a regions diversion rate.

Items that have been purchased or obtained by a consumer and have fulfilled their original use, then are collected as part of a recycling program are labeled as post-consumer recycling. These are the items that the *EPA Measuring Recycling* guidebook identifies as countable.

When a post consumer item’s obvious usable life comes to an end, the consumer has a choice to reuse the item, recycle the item, or send the item off for landfilling or incineration. When the consumer chooses reuse or recycling, the indication is that the local waste management program has succeeded in successfully diverting the item away from disposal through education, recycling facility accessibility, and establishment of local markets. If the consumer chooses to landfill the recyclable, it indicates that a recycling opportunity was missed.

On the contrary, when an item is created as the result of an industrial or commercial operation it has similar opportunities. The different lies with that instead of an individual chooses to recycle or not recycling, the decision maker is an institution with financial and resource considerations. The fate of the recyclable item often rests in the most financially sound decision. If the business can reuse, resell, trade, or convert the recyclable at a cost savings over land filling the item, that will most likely be their choice. Even if recycling was not promoted, the business would still elect to recycle or reuse the item out of resource conservation that would ultimately aid in building profits.

The question is to count items that would never be slated for land filling out of monetary gain to the company. A few examples are listed below.

-Sawdust from a mill that is sold for MDF or fuel.

-Steel from a car manufacturer that is resold to another industry.

-Petroleum byproducts for a plastics producer that has usability for another type of manufacturer.

-Scrap metal form auto salvage.

-Human food byproducts sold to livestock feed companies.

-Corn mash from ethanol production sold as feed.

All these items are a form of recycling, but would be preformed regardless of governmental policy or environmental stewardship reasons.

Issues:

To Be Determined By Task Force

Focus Questions:

1. Should Tennessee continue with a diversion type waste reduction goal or should it change its goal to a recycling or other type(s) of waste reduction goal(s)?
2. What should be considered as acceptable materials in a waste reduction goal?
3. How should the waste reduction goal be calculated?
4.